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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/057,133	01/24/2002	Andrew Storm	52637-0033	1850
29989	7590	09/01/2006	EXAMINER	
HICKMAN PALERMO TRUONG & BECKER, LLP			LU, JIA	
2055 GATEWAY PLACE			ART UNIT	
SUITE 550			PAPER NUMBER	
SAN JOSE, CA 95110			2611	

DATE MAILED: 09/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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**Office Action Summary**

Application No.

10/057,133

Applicant(s)

STORM ET AL.

Examiner

Jia W. Lu

Art Unit

2611

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --****Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 June 2006.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,3,8-10,12,17-19,21,26-28,30,35,36 and 57-68 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3,8-10,12,17-19,21,26-28,30,35,36 and 57-68 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments filed 6/12/06 have been fully considered but they are not persuasive.

Regarding claim 1, applicant argues that "the two decision feedback equalizers are not operating in the same manner and therefore cannot be considered equivalent to a single time domain equalizer operating with two different sets of coefficients" (page 11).

In response to this argument, while one decision feedback equalizer in Marchetto operates in a forward manner, and another in a reverse manner, "both forward DFE and reverse DFE produce a tentative decision concerning the sequences of data transmitted" (column 22). They both operate on sets of coefficients, one of which is selected for equalization to the input signal. The fact that the equalizers are physically separate is not significant in view of the language of the claim; the forward and reverse DFE can be grouped to be called a single bidirectional equalizer.

New claims 57-68 have been considered.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 1, 3, 8-10, 12, 17-19, 21, 26-28, 30, 35, 36 are rejected under 35

U.S.C. 103(a) as being unpatentable over US patent 6,834,109 and US patent 5,513,215.

a. Regarding claims 1, 10, 19 and 28, patent '109 discloses a communications receiver including a time domain equalizer (figure 2, element 212), a frequency domain equalizer (figure 2, element 214), and updating means to update both time and frequency domain equalizers based on communication performance (figure 2, element 210). While patent '109 does not disclose the time domain equalizer to include determining first and second performance data and selecting between two sets of coefficients based on the two sets of performance data, patent '215 describes a bidirectional equalizer (figure 13, elements 302 and 304) to select between a first and a second set of equalizer coefficients as means for its update mechanism (column 27, lines 50- column 28, line 2). While '215 discloses the claimed invention except that the two different sets of equalizer coefficients are used in a two physically separate equalizers

instead of one, the systems are functionally equivalent to each other. It would have been obvious to one ordinarily skilled in the art to use a comparison between two sets of equalizer coefficients in an equalizer update mechanism as described in patent '109 to determine the best suited coefficients for varying data.

- b. Regarding claim 3, 12, 21, 30, patent '109 does not disclose synchronization means in its equalizer update mechanism. However, patent '215 describes the use of pilot symbols as means for synchronization in its equalizer (abstract, lines 11-17). It would have been obvious to one ordinarily skilled in the art to use synchronization as part of an equalizer update mechanism like one described in patent '109 to ensure accuracy and uniformity of data reception.
  - c. Regarding claims 8, 17, 26, 35, patent '109 describes the receiver in a digital subscriber line configuration (column 1, line 42).
  - d. Regarding claims 9, 18, 27, 36, patent '109 describes the receiver as part of a discrete multitone system (column 7, lines 27-31).
3. Claims 57, 60, 63, 66 are rejected under 35 U.S.C. 103(a) as being unpatentable over US patent 6,834,109 and US patent 5,513,215, further in view of US patent 6,418,558. Both patents '109 and '215 failed to teach that the operating of the equalization coefficients are determined by the signal to noise ratio, however, patent '558 describes in detail the use of signal-to-noise ratio in its equalizer adjustments (column 55, lines 38- 42). It would have been obvious to one

ordinarily skilled in the art to use the signal to noise ratio as an equalization coefficient determining factor because the signal to noise ratio is an indicator to error signal.

4. Claims 58, 59, 61, 62, 64, 65, 67, 68 are rejected under 35 U.S.C. 103(a) as being unpatentable over US patent 6,834,109 and US patent 5,513,215, further in view of US 6,243,414. While '109 and '215 do not show the update mechanism to determine an updated bit allocation based on the first and second performance data, the use and benefits of updating bit allocations and performing gain adjustments are well known in the art, for example, see patent '414 (figure 2, element 56). It would have been obvious to one ordinarily skilled in the art to use this bit allocation and gain update feature in the receiver disclosed in patent '109 in order to provide better gain control as well as distribution and combinations of tones (column 4, lines 20-57).

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jia W. Lu whose telephone number is 571-272-6042. The examiner can normally be reached on Mon- Fri, 10:30AM-6:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh M. Fan can be reached on (571)272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

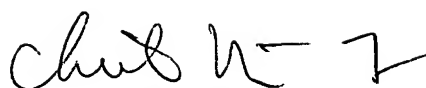
Jia Lu

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Examiner

A handwritten signature in black ink, appearing to read "Chieh M. Fan", with a stylized flourish at the end.

CHIEH M. FAN  
SUPERVISORY PATENT EXAMINER